

REMARKS

Reconsideration of the claims is respectfully requested.

No new matter has been added by this amendment.

Claims 1-17 remain in the application.

The Examiner has rejected claims 1, 2, 4-6,8-11,14,15 under 35 U.S.C. 102(b) as being anticipated by Shimizu et al. (6,484,676) and, states, "Regarding claims 1,5: Shimizu discloses a method for controlling an intake engine valve capable of variable closing timing, comprising: determining a condition indicative of white smoke or unburned hydrocarbon products (see column 4,lines 5 to 18); closing the intake engine valve at a first crank angle for a given engine operation condition when the condition indicative of white smoke production exists, the second crank angle being less than the first crank angle (see figure 2). Shimizu also discloses advancing the closing of the intake valve relative to the first crank angle when the condition indicative of white smoke production exists (see numeral S3)." The Examiner further states, "Regarding claims 2,6: Shimizu discloses the condition indicative of white smoke production comprises at least one of: an excess quantity of fuel injected into a combustion chamber; a low intake manifold pressure; and a low engine temperature, in that Shimizu discloses a low engine temperature (see column 4,lines 5 to 18)."

The Examiner further states, "Regarding claims 4,8: Shimizu discloses the given engine operating condition comprises: a first engine speed (see abstract), and a first fuel quantity (see column 3, lines 27 to 32)." Additionally, the Examiner states, "Regarding claim 9: Shimizu discloses an apparatus for controlling an intake engine valve capable of variable closing timing, comprising: at least one sensor operable to determine an engine operating condition indicative of white smoke production, the at least one sensor operable to transmit at least one signal as a function thereof (see column 4,lines 5 to 18); an engine valve controller coupled with the at least one sensor to receive the at least one signal,

the engine valve controller operable to transmit a first signal indicative of a desired timing for the closing of the intake engine valve as a function of the at least one signal indicative of white smoke production (see figure 1), and a variable intake valve actuator operable to close the intake engine valve as a function of the first signal (see figure 2).” Additionally, the Examiner states, “Regarding claim 14: Shimizu discloses an apparatus for controlling an intake engine valve capable of variable closing timing, comprising: at least one sensor operable to determine an engine operating condition indicative of white smoke production, the at least one sensor operable to transmit at least one signal as a function thereof (see column 4, lines 5 to 18), an engine valve controller coupled with the at least one sensor to receive the at least one signal, the engine valve controller operable to transmit a first signal indicative of a desired timing for the closing of the intake engine valve as a function of the at least one signal indicative of white smoke production (see figures 1); wherein the first signal is indicative of a first crank angle when the at least one signal is indicative of an engine operating condition not indicative of white smoke production, and wherein the first signal is indicative of a second crank angle when the at least one sensor is indicative of an engine operating condition indicative of white smoke production, the second crank angle being advanced with respect to the first crank angle (see figure 2); and a variable intake valve actuator operable to close the intake engine valve as a function of the first signal (see numeral 14).”

The Examiner continues, “Regarding claim 10: Shimizu discloses the engine valve controller is operable to close the intake engine valve at a first crank angle for a given engine operating condition when the condition indicative of white smoke production does not exist; and close the intake engine valve at a second crank angle for the given engine operating condition when the condition indicative of white smoke production exists, the second crank angle being less than the first crank angle (see figure 2).” The Examiner finishes by saying, “Regarding claims 11, 15: Shimizu discloses at least one sensor operable to determine a second engine operating condition and to transmit at least one signal

indicative thereof; and wherein the engine valve controller is further operable to transmit the first signal as a function of the at least one signal indicative of the second engine operating condition (see abstract).”

Applicants have amended independent claims 1, 5, 9 and 14, and claims 2, 4-6, 8-11 and 15 depending therefrom and contend that the amendment thereof overcomes the Examiner’s rejection. For example, the limitation of opening the intake engine valve at a preestablished crank angle while the intake engine valve is closed at a first crank angle for a given engine operating condition when the condition indicative of white smoke production does not exist has been added. Also, the limitation of opening the intake engine valve at the preestablished crank angle while the intake engine valve is closed at a second crank angle for the given engine operating condition when the condition indicative of white smoke production exists has been added. Shimizu fails to teach or suggest maintaining the opening of the intake engine valve at a preestablished crank angle while changing the crank angle at which the intake engine valve is closed. Thus, Applicants contend that independent claim 1, 5, 9 and 14 are allowable over the cited art. Support for Applicants amendment can be found in Figure 6 and on page 14, in paragraph (56). Thus, Applicants’ contend that dependent claims 2, 4-6, 8-11 and 15 add further limitation to an allowable claim and are also allowable.

The Examiner has rejected claims 3, 7, 13 and 17 under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Nishar et al. (6,045,482) and states, “Shimizu discloses the claimed invention as recited above; and further discloses detecting cooling water temperature of the engine as indicative of engine temperature. Shimizu fails to disclose the low engine temperature comprises a low intake manifold air temperature and the at least one sensor comprises at least one of an intake manifold temperature sensor, and an intake manifold pressure sensor. However, Nishar teaches sensing the intake manifold air temperature and an intake manifold temperature sensor (see numeral 86). It would have been obvious to one having ordinary skill in the art at the time the invention was made at the time the invention was to modify Shimizu’s system by providing an intake manifold air

temperature sensor as taught by Nishar in order to use various means of accessing the engine's temperature."

Applicants have amended independent claims 1, 5, 9 and 14, and claims 3, 7, 13 and 17 depending therefrom and contend that the amendment thereof overcomes the Examiner's rejection. For example, the limitation of opening the intake engine valve at a preestablished crank angle while the intake engine valve is closed at a first crank angle for a given engine operating condition when the condition indicative of white smoke production does not exist has been added. Also, the limitation of opening the intake engine valve at the preestablished crank angle while the intake engine valve is closed at a second crank angle for the given engine operating condition when the condition indicative of white smoke production exists has been added. Shimizu fails to teach or suggest maintaining the opening of the intake engine valve at a preestablished crank angle while changing the crank angle at which the intake engine valve is closed. Thus, Applicants contend that independent claim 1, 5, 9 and 14 are allowable over the cited art. Support for Applicants' amendment can be found in Figure 6 and on page 14, in paragraph (56). Thus, Applicants contend that dependent claims 3, 7, 13 and 17 add further limitation to an allowable claim and are also allowable.

The Examiner has rejected claims 12 and 16 under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Cullen et al. (5,303,168) and states, "Shimizu discloses the claimed invention as recited above; and further discloses a low engine temperature as indicative engine operating condition (see column 4, lines 5 to 18). However, Shimizu fails to disclose the second engine operating condition comprises at least one of: an excess quantity of fuel injected into a combustion chamber, a low atmospheric pressure. However, Cullen teaches excess fuel results in unburned hydrocarbons (see column 4, lines 19,20). It would have been obvious to one having ordinary skill in the art at the time the invention is made to modify Shimizu's system by providing excess fuel as an indicative of white smoke as taught by Cullen in order to sense and control all the variables that

contribute to unburned hydrocarbons and thereby improve the engine's performance."

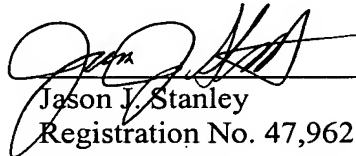
Applicants have amended independent claim 14 and claims 12 and 16 depending therefrom and contend that the amendment thereof overcomes the Examiner's rejection. For example, the limitation of opening the intake engine valve at a preestablished crank angle while the intake engine valve is closed at a first crank angle for a given engine operating condition when the condition indicative of white smoke production does not exist has been added. Also, the limitation of opening the intake engine valve at the preestablished crank angle while the intake engine valve is closed at a second crank angle for the given engine operating condition when the condition indicative of white smoke production exists has been added. Shimizu fails to teach or suggest maintaining the opening of the intake engine valve at a preestablished crank angle while changing the crank angle at which the intake engine valve is closed. Thus, Applicants contend that independent claim 14 is allowable over the cited art. Support for Applicants' amendment can be found in Figure 6 and on page 14, in paragraph (56). Thus, Applicants contend that dependent claims 12 and 16 add further limitation to an allowable claim and are also allowable.

Applicants contend that independent claims 1, 5, 9 and 14 are in condition for allowance and that dependent claims 2-4, 6-8, 10-13 and 15-17 add further limitations to an allowable claim and are thus also allowable. Thus, Applicants contend that the rejection by the Examiner has been overcome by the amendment herewith, as discussed above, when considering Shimizu, Nishar et al. and Cullen et al. singularly or in combination.

The prior art made of record and not relied upon has been considered and is not considered more pertinent than the cited art of record when considering the amended claims as set forth above.

It is respectfully urged that the subject application is in condition  
for allowance and allowance of the application at issue is respectfully requested.

Respectfully submitted,



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